

REMARKS/ARGUMENTS

The Examiner questioned the word “switchably” in claim 8. This claim is summarized at length from page 11, line 25 to page 12, line 22. The word “switchably” is explained in some detail at page 12, lines 7-14. The word “switchably” is being deleted. This amendment both clarifies and broadens the claim.

Claims 9-16 were found to contain patentable subject matter. Claim 9 is being made independent, placing these claims in condition for allowance.

Claims 1-6 were rejected as either anticipated or obvious over Yamasaki et al. Claim 7 was rejected over Yamasaki et al. in view of Yuasa. Claim 8 was rejected over Yamasaki et al. in view of Niihara.

Claims 1-4 are being amended. The amendments clarify (a) that the first clamping member set includes at least two first clamping members which are brought into abutment against a surface of the substrate when the first clamping member set clamps the substrate, and (b) that the second clamping member set includes at least two second clamping members which are brought into abutment against a surface of the substrate when the second clamping member set clamps the substrate. It is submitted that Yamasaki et al. fail to disclose or suggest the process steps as recited in current claim 1 and its dependent claims 2-8.

Yamasaki et al. disclose a wafer holding mechanism of spin chucking type as shown in Figs. 9 and 10 of their patent, and column 13, line 50 to column 14, line 20. The wafer holding mechanism includes four pins 40 and four pins 41 alternately arranged at equal intervals around the circular edge of the rotational supporting member 38 to

which the pins 40 and 41 are joined. The pins 40 and 41 have pockets 40A and 41A, respectively, on which the edge of the wafer 10 is placed and held. Yamasaki et al. states: "When the wafer 10 is rotated, it is placed and held on the eight pockets 40A and 41A of the pins 40 and 41." However, there is no statement or suggestion that the eight pins 40 and 41 are all simultaneously moved into abutment against the edge of the wafer 10, because the pockets 40A and 41A have an L shape in cross section as shown in Fig. 10 of the patent. That is, even without the pins 40 and 41 being in abutment against the edge of the wafer 10, the wafer 10 will still be held by the eight pockets 40A and 41A from underneath.

At column 14, lines 8-17 of the Yamasaki et al. patent, it is stated that "the four pins 40 are contacted with the end face [edge] 10C of the wafer 10 during a front half of an etching or cleaning process", and that "Then, the four pins 41 are contacted with the end face 10C during a rear half of the process." Therefore, Yamasaki et al. may be said to disclose the first substrate rotation process and third substrate rotation process as recited in claim 1 of the present application. However, Yamasaki et al. fail to disclose the second substrate rotation process as recited in claim 1, which requires both the first and the second clamping member sets to clamp the substrate with all the first and second clamping members being in abutment against the peripheral surface of the substrate.

On page 7, lines 16-20 in the action, the Examiner states that "it would be necessary to clamp the second set of clamping members before releasing the second [sic: first?] set of clamping members in order to hold the substrate..." However, there is no explicit recitation, in Yamasaki et al.'s patent, that discloses or suggests such an

operation of the pins 40 and 41. If it had been necessary, Yamasaki et al. would have described it. As explained in the preceding paragraph, the applicants cannot agree that such an operation is either necessary or disclosed in Yamasaki et al. Again, in switching from using the four pins 40 to using the four pins 41 to hold the wafer 10, it is not necessary for both the four pins 40 and the four pins 41 to be brought into an abutment against the edge 10C of the wafer 10 because the wafer 10 is supported by the pins 40 and 41 from underneath.

The Examiner has used an inappropriate hindsight interpretation of Yamasaki et al., based on and informed by the disclosure of the present application, to conclude that the four pins 41 must clamp the wafer 10 before the four pins 40 release the wafer 10 in order to successfully switch from using the four pins 40 to using the four pins 41.

According to the present invention, the second substrate rotation process is performed between the first substrate rotation process and the third substrate rotation process, and both the first and second clamping members are in abutment against the peripheral surface of the substrate during the second substrate rotation process, thereby successfully switching the first clamping member set to the second clamping member set to hold the substrate. This novel step, at least, provides that the substrate is not slid on the clamping members when the substrate clamping positions are changed, whereby the apparatus is virtually free from the generation of particles. See page 77, lines 7-10 of the specification.

Furthermore, if the first clamping member set released the substrate before the second clamping member set clamped the substrate, then the substrate could slide on the

first and second clamping members and rotate relative to the clamping members. Thus, the second clamping member set might, in the worst case, clamp the same positions as those that were clamped by the first clamping member set. In this case, the clamping positions would remain unchanged.

In view of the foregoing amendments and remarks, allowance of both claims 1-8 and claims 9-16 is requested.

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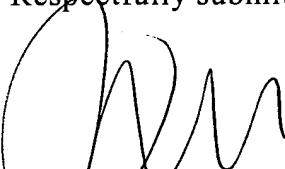
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May 16, 2005

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Respectfully submitted,



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